Institutional Barrier #10
Reliability of NCAs versus Transmission Upgrades

BPA Lead: Terry Oliver, Ken Keating
Round Table Lead: Tom Foley
Participants: Margie Schaff, Ken Canon

Problem Statement

The level of certainty for non-construction alternatives (NCAs) used to defer transmission has to be much greater than when the NCAs are used as energy resources, backup resources, or other. In particular, we need to determine with certainty that any group of NCAs subsequently relied on to defer transmission will do so under 1 in 20 year weather conditions.

Current Situation

Many of the non-construction alternatives we are considering have been used before to provide backup power to individual loads, to save energy, and even to relieve congestion on transmission wires. However, they have seldom been used to defer transmission[1]. Because NCAs as we envision them have not been used in the past to defer transmission needs, there is a natural reluctance to rely on them. In addition, we do not have good data on how the NCAs would respond under 1 in 20-year weather conditions.

Energy conservation measures, e.g., may be calculated to be $.02/kWh. If we are low by as much as 50%, the actual costs are higher, but the measure at $.03/kWh is clearly cost-effective, and little harm has been done. The energy is simply made up from other reserves. A similar condition may apply to generation. With transmission; however, the peak reduction or the amount of output at peak from all of the NCAs deployed has to be maintain peak loads below the capacity of the transmission and distribution system. If they do not, load isn't served, with consequent damages. Thus, certainty of the performance of NCAs is paramount to using them to defer transmission. If and when we gain this certainty, we will also have to assign a safety factor to the NCAs. That is, do we employ NCAs that will keep transmission capability at 100% of possible peak loads, 10% above, 20% above? What level of safety factor should we use?

Goal

The goal is to determine the certainty with which we can rely on NCAs to reduce peak load in a 1 in 20 winter.

1. **Separate NCAs into groups with certain know characteristics, as follows:**

[1] An exception to this statement is in the Puget Sound Voltage Collapse study in the early 1990s. There conservation was used to help defer a major upgrade to transmission across the Cascades.

- **Energy efficiency measures,**
- **Distributed generation, including SCCT, e.g.,**
- **Contractual demand response, and**
- **Voluntary demand response.**

1: For energy efficiency; possible steps:

1. **Reconvene the Regional Technical Forum to** review the savings of deemed measures to analyze and determine how they would react in 1 in 20 weather conditions. Add measures if appropriate to the set of deemed measures.
2. **Run pilot programs to** determine effects from energy efficient measures under harsh weather conditions. Perhaps one way to do this is to blitz a set of loads hooked to a single substation and measure the effects of the cumulative NCAs at the substation.
3. **Run real deferral project for** two years to learn how we are doing. If we are not getting the results we want, commence construction of wires.

Who: Ken Canon??, Terry Oliver??
Due Date: Set up by end of October
Dollars: Maybe can use $$ from other entities already deploying NCAs. New costs may be costs of evaluation only.
Partners: Retail utilities, interest groups, state agencies, PUCs, Energy Trust of Oregon, NEEA, e.g.

2. **For distributed generation:**

1. **Gather a group of QF representatives** to discuss this problem with them'
   - **Focus on fuel availability in a 1 in 20 year weather condition.**
   - **Focus on reliability of generators in a 1 in 20 year weather condition,**
   - **How many dg units are needed to bring certainty that x% will be operating on peak?**
   - **Run pilot projects similar to the energy efficiency pilots above?**

Who: Mike Hoffman, Tom Foley, Bob Kahn
Due Date: June 2004
Dollars: none (internal staffing costs only)
Partners: Retail utilities, interest groups, state agencies, IPPS, and QFs.

3. **For contractual demand response:**

1. **Review past history of end-users under contract (perhaps DSIs, although they may be a special case).**

- **How often are contracts defaulted on?**
- **Determine how difficult it would be for prospective loads to actually defer loads in a 1 in 20 year weather condition.**

Who: Grant Jackson, Ken Canon
Due Date: October 2004
Dollars: none (internal staffing costs only)
Partners: Retail utilities, ICNU, Others?

4. **For voluntary demand response:**
    1. **Review past history of end-users under voluntary demand response programs.**
    2. **Determine how difficult it would be for prospective loads to actually defer loads in a 1 in 20 year weather condition.**

Who: Grant Jackson, Ken Canon
Due Date: October 2004
Dollars: none (internal staffing costs only)
Partners: Retail utilities, ICNU, others

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